



PRINCIPLES OF USING NETWORK TOOLS IN IMPROVING THE METHODS OF DISTANCE TEACHING "HUMAN ANATOMY AND PHYSIOLOGY" IN HIGHER EDUCATION

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ABSTRACT

The article presents the foundational didactic principles that are the theoretical basis for the organization of distance teaching in the field of "Human Anatomy and Physiology" using network teaching aids. In particular, the scientific principle of the teaching material is described. The application of this principle guarantees a comprehensive knowledge of facts and concepts that are scientifically proven, have a worldview and practical significance. The principle of comprehensibility involves the layout and design (presentation of material), the interaction with the educational content, elements of the network educational-methodical complex, developed taking into account the mental and physical age of students. The principle of systematization ensures goal-oriented regulation of students' knowledge and skills. The principle of visualization of the educational material provides demonstration of the studied objects, processes and events. The principle of variability of educational material allows to individualize the process of distance teaching of the subject "Human Anatomy and Physiology" on the basis of a network of educational and methodical complexes.

KEYWORDS:- Distance teaching, teaching material, scientific principle, comprehensibility principle, systematization principle, visualization principle, variability principle, consciousness principle, activity principle, biological knowledge, biological object, video, interactive method, living nature, theoretical base.

INTRODUCTION

The basic didactic principles are the theoretical foundation for the organization of distance teaching of the subject "Human Anatomy and Physiology" using network teaching applications.

Scientific principle of educational material. The application of this principle guarantees a full knowledge of facts and concepts that are scientifically proven, have a worldview and practical significance [122]. This is reflected in the careful and reasonable selection of the content of distance teaching "Human Anatomy and Physiology", as well as the content of the

educational and methodological complex of the network. The network educational-methodical complex of the subject "Human Anatomy and Physiology" is developed in strict accordance with the requirements of the standard curriculum. The developed educational-methodical complex of the network clearly reflects the current state of the subject "Human Anatomy and Physiology" and the logic of the scientific knowledge of the course. For example, all of the visual material presented in a hypermedia environment conforms to natural prototypes (movement in blood vessels, condition of the heart, respiration in cells and lungs, skin structure, etc.).



This principle clarifies the tasks of biological education in students, such as the formation of a scientific worldview, understanding the scientific landscape of the universe, acquaintance with the methods of scientific knowledge.

The need to reveal the interrelationships between biological objects and phenomena arises from the scientific principle to determine the cause-and-effect relationships based on the analysis of the facts obtained as a result of the use of biological material in various activities.

The principle of comprehensibility involves the layout and design (presentation of material), the interaction with the educational content, elements of the network educational-methodical complex, developed taking into account the characteristics of the mental and physical age of students. It is also necessary to take into account this or that element of knowledge, or the time spent to acquire the full range of knowledge. For example, spatial analysis and synthesis disorders are observed in students with mental and physical characteristics involved in distance learning. Such distortions do not fully evaluate the object under study in two dimensions (flat) and in the same image. In this case, the educational material is represented in the network educational-methodical complex in various images (three-dimensional static image, animation, video film, etc.).

The measure of comprehension depends not only on the amount of knowledge, but also on the ways in which it is expressed. In order to master the content well, it is necessary to connect with life, with facts already known to students, with knowledge gained from other disciplines. In distance teaching there are links to additional study material for students, previously studied material, teaching material of other disciplines.

Requirements of the principle of comprehensibility are to take into account the age and individual characteristics of students in

distance teaching, as well, to rely on familiar facts, knowledge, experience and use appropriate methods of narration.

The principle of visualization of the educational material provides demonstration of the studied objects, processes and events. The principle of visualization plays an important role in the use of the network educational-methodical complex, as it implements all the components of verbal and nonverbal demonstration. The educational-methodical complex of the network provides the student with educational materials on the subject "Human Anatomy and Physiology" with a complex combination of static and dynamic visual aids (images, animations, videos, three-dimensional models, etc.). Static visual aids that complement the content of the network training complex include: hypertext (links to additional material), photographs (for example, people with various diseases, organs), pictures (structure of organs and organ systems), graphs, diagrams, tables, diagrams. Dynamic tools are presented in the form of animated schemes (blood flow in the veins, breathing from the lungs, etc.), dynamic models (movement in the blood vessels, etc.), interactive tasks, videos. In addition to the visual aids for data transmission, audio aids were also provided - audio or music for the videos, text, descriptions, and conclusions drawn from the study material. This principle is used in the organization of knowledge control, as well as to demonstrate the results and achievements of students.

The main requirement of the principle of demonstration in distance learning: the visual image should help to determine the essence of the object under study, on the basis of which it is possible to reveal the concept, its essential features. Therefore, a single learning material can be presented using a variety of visual aids. It is also related to the physical and mental characteristics and spatial perceptions of



students participating in distance learning.

The use of the principle of visualization in distance learning encourages the creation and use of visual aids for teaching the subject "Human Anatomy and Physiology", the development of methods for their use.

The principle of systematization in using the network educational-methodical complex provides purposeful regulation of students' knowledge and skills. Systematics is reflected in the structure and consistency of the elements of the content of the educational material "Human Anatomy and Physiology", which is divided into stages in accordance with the level of mastery of concepts.

The principle of consistency in the use of content elements in the development of biological knowledge of the subject "Human Anatomy and Physiology". In distance learning, learning topics should be studied slowly and step-by-step, taking into account the individual capabilities of students, following the transition to each subsequent stage after the full mastery of the knowledge of the previous stage, including appropriate types of activities for mastering the content.

The next topic of science is devoted to the origin of man, in which students are invited to learn about the structural state of man, comparing him with other members of the Monkey Squadron. The study of the human body begins with the topic "General analysis of the structure of the human body", in which the material is presented in accordance with the levels of organization of living nature: cell → skin → organs → organ systems → organism. The anatomical features of each organ system are then considered in such a sequence. The unity of structure and function, the integrity of the organism and its relationship with the environment, the mechanisms that support homeostasis go through all the topics of the

subject "Human Anatomy and Physiology" in the discipline "Human Anatomy and Physiology".

The principle of students' consciousness implies conscious activity, such as the search for, acquisition of educational information by students and the application of knowledge acquired in human anatomy, physiology, ecology and hygiene in solving educational problems and in real life situations. This is determined by the characteristics of the health of students participating in distance learning, their understanding of the need to acquire biological knowledge in the absence of full-time study, their understanding of the state of their health.

The principle of student activity implies that the student sets and accepts the goals of the lesson, participates in the planning and organization of their activities using a network of educational and methodological complex, self-monitoring and self-assessment [167]. It is necessary to increase the independence of students in distance learning, as A.V. Khutorskiy said: "Teach children to ask questions. The question is more important than the answer, because it does not close knowledge, but opens it" [167, p. 92]. In the independent study of a new topic on the basis of the network educational-methodical complex, the teacher organizes a discussion in the classroom, based on the questions created by the students themselves, aimed at expanding knowledge and mastering. The discussion, based on the questions structured in distance learning, is conducted among students participating in distance learning using a network of educational and methodological complex forums (or virtual learning). The teacher can only steer this discussion in the right direction.

The content of the subject "Human Anatomy and Physiology" allows to know oneself in real situations, to use students' personal life experiences to explain the events, happenings, processes that occur in the human body.



The requirement of the principle of activity: the use of different methods of distance learning that activate students' thinking, their involvement in various activities, the development of independent work, the organization of team creative activity, the development of self-esteem.

The principle of multi-component networking tools of teaching provides a full-fledged use of the developed teaching methodological complex for the acquisition, expansion, consolidation, control and mastery of self-control. According to the results of our study, teachers use distance learning in the process of learning more from the network of teaching aids - 37% of the total number of teachers who use the network of teaching aids (according to the survey). According to the developers of the subject "Human Anatomy and Physiology", only 13% of teachers surveyed use the integrated use of the network educational and methodological complex. The format of the network educational-methodical complex is multi-component, all components complement each other and are aimed at the optimal acquisition of knowledge.

The principle of variability of educational material on the basis of the network educational-methodical complex allows to individualize the process of distance learning of the subject "Human Anatomy and Physiology". From text and presentations to explanations of material in the form of animation - the availability of a variety of district resources at the basic and advanced levels allows students with limited health and other resources to choose resources that are convenient for each student. Working with a network of educational and methodological complexes can also be varied - a detailed study of the whole material, selective acquaintance with individual resources, acquaintance with basic concepts, collection of illustrations and interesting facts, etc. The requirement of this principle for distance

learning is: stratified selection of tasks and assessment of each student on the basis of individual characteristics, activity. Due to the variability of the network educational and methodical complex, in the process of experimental distance learning, we were able to individualize the learning material, its presentation, as well as the speed of learning each topic of the subject "Human Anatomy and Physiology" for each student.

The principle of independence of students in the process of distance teaching is based on the fact that the network educational complex is located on the Internet, which requires additional efforts to search and sort for registered students (unlike the textbook, which is available to each student). Independent search and selection of the necessary training information in the network training complex forms the universal training skills required to work with network training tools. The principle of independence of student activity is related to the principle of variability of educational material. The requirement of the principle of independence of student activity: independent choice of actions with resources and content is determined by the student, the student performs the necessary actions and self-control.

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